

# POPSEE

## 40th Anniversary

## Biographical Sketches

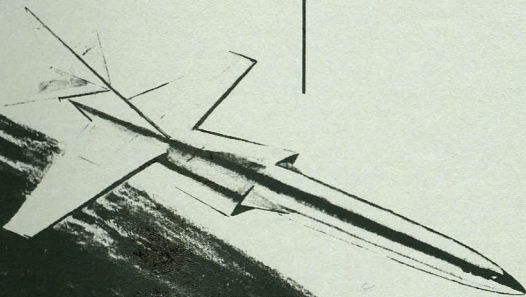
1951-1991

GIVING  
WINGS  
TO  
THE  
ATOM

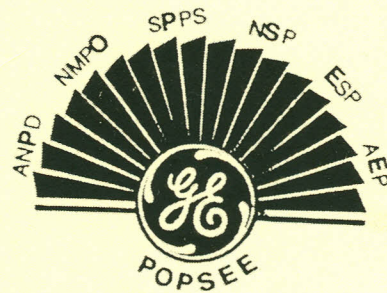
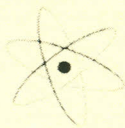
*40 Years and Many Ideas Later*

GENERAL  ELECTRIC

AIRCRAFT NUCLEAR PROPULSION DEPARTMENT  
CINCINNATI 15, OHIO







# POPSEE

## ANP 50th Anniversary

### Biographical Sketches

Volume II

2001

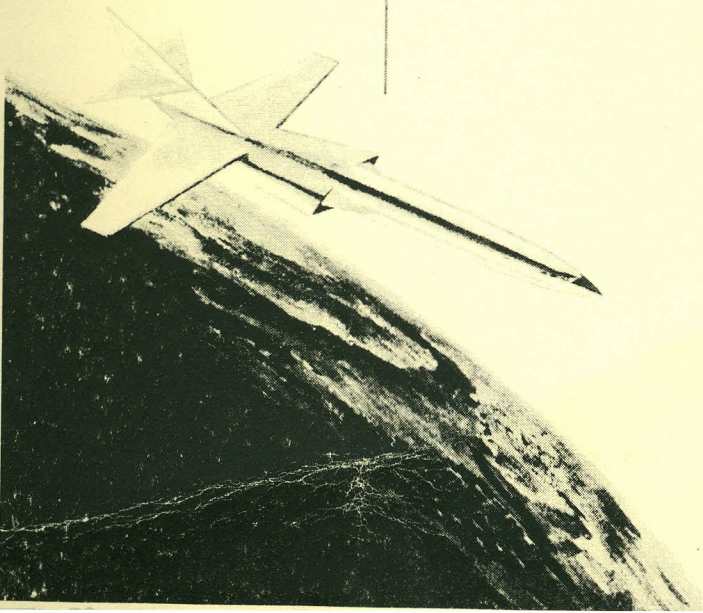
GIVING  
WINGS  
TO  
THE  
ATOM

*50 Years and Many Ideas Later*

ATOMIC PRODUCTS DIVISION

GENERAL  ELECTRIC

AIRCRAFT NUCLEAR PROPULSION DEPARTMENT  
CINCINNATI 15, OHIO





On June 1, 1951, the General Electric Company accepted the challenge to develop a nuclear reactor power plant for the propulsion of aircraft. The project began in 1951 and the first flight of the aircraft was made in 1953. The aircraft was a modified C-47 and was powered by a nuclear reactor. The project was a joint effort between the General Electric Company and the United States Navy. The aircraft was used for a variety of purposes, including testing the feasibility of nuclear propulsion for aircraft.

The impact of the development of a powerplant was a major step in the development of nuclear propulsion for aircraft. The aircraft was able to fly for a long time without refueling, which was a major advantage. The aircraft was also able to fly at high altitudes, which was another advantage. The aircraft was used for a variety of purposes, including testing the feasibility of nuclear propulsion for aircraft. The aircraft was also used for a variety of other purposes, including testing the feasibility of nuclear propulsion for aircraft.

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## what was it?

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Fifty years ago, in 1951, the General Electric Company accepted the challenge to develop a nuclear power plant for the propulsion of aircraft. The project began in Oak Ridge, TN, taking up at the point where the theoretical and feasibility studies carried out by the Fairfield Engine & Airplane Corporation had been concluded. The preliminary studies were known as NEPA (Nuclear Energy for the Propulsion of Aircraft).

The impetus to develop such a powerplant came from its military potential. A nuclear powered airplane would be able to fly almost indefinitely without re-fueling or landing, thus enabling it to serve as an airborne "picket on watch" for enemy missile launches or for enemy bomber flights. Another advantage of a nuclear powered airplane would be its ability to fly indefinitely at high speeds and at altitudes so low as to be undetectable by radar. In contrast, conventionally powered airplanes consume so much fuel at low altitudes and high speeds as to severely limit their use in that type of flying. GE recognized the military potential of nuclear powered flight at an early date.

When GE undertook to carry on the development work and fabrication of a nuclear power plant, the project was moved to Evendale, OH and became the Aircraft Nuclear Propulsion Project (ANPP) in the Aircraft Gas Turbine Division. D.R. Shoults, formerly Director of Engineering at ARO, Inc., became Project Manager. Dr. M.C. Leverett, Manager of Engineering for NEPA, continued in that capacity on the ANP Project. Eighty-seven NEPA project people joined GE on May 1, 1951, and others who had worked on the preliminary studies later became GE employees. The fifty-four people who had joined GE in May 1951 and were still at Evendale five years later in 1956 are shown in the photograph (page 7) which was taken on the occasion of receiving their five-year service pins.

In September 1953, the Project was transferred to the Atomic Products Division and received Department status, becoming ANPD. In October, 1954, the Idaho Test Station, formerly referred to as the "remote site", achieved Section status in ANPD. As growth continued, five new Sections were set up in 1955 to keep pace with the expanding projects. The Idaho Station facilities were also expanded for the growing number of employees.

Significant progress toward nuclear powered flight capability was made. Considerable advancements were made in fuel element design and materials development, and in other related technologies. In late 1956, the HTRE-1 (Heat Transfer Reactor Experiment) air cooled reactor operated a prototype X-39 engine at the Idaho Test Station, demonstrating the feasibility of nuclear powered flight. In 1959 the X-211 turbojet engine designed for the nuclear powered aircraft, was built in Evendale and tested using conventional fuel combustors. However, the high temperature reactor for testing with the X-211 engine was never completed.



The relatively rapid progress made by GE on the air cooled direct cycle power plant (despite the repeated changes of mind by the Air Force about what kind of nuclear powered airplane should be first developed and flown) indicates that the direct cycle would have been successful at an earlier date than the liquid metal cooled indirect cycle power plant being developed by Pratt and Whitney's nuclear powered airplane project.

The ANPD organization in November of 1957 is shown on page 9.

In 1960, Dr. Herbert York, Director of Research & Engineering, Department of Defense, expressed the opinion that early flight with what was available then just didn't measure up in the competition for money and scientific manpower with other defense research projects. The major competitive project was the Intercontinental Ballistic Missile, and the Government's decision to favor that system led to the termination of the ANP project by the Air Force in May, 1961, just ten years after its inception. The loss of the Project was the subject of a lead editorial in the Cincinnati Enquirer of April 19, 1961:

"In practical terms, this means that Evendale's work force will be reduced from 2300 to 375. -- Highly trained technicians like those engaged in the nuclear flight program will not be an employment problem as they undoubtedly will be snatched up by other employers. But the experience they have acquired in this specific program stands to be lost, and if the future should dictate the importance of nuclear flight to the nation's safety, these technicians will have taken their talents into a hundred different fields. Rebuilding a competent technical team could become a truly Herculean task."

ANPD Managers were:

|      |              |
|------|--------------|
| 1951 | D.R. Shoults |
| 1959 | S.J. Levine  |
| 1960 | D. Shaw      |

All was not lost. The research work on high temperature nuclear materials was continued as NMPO (Nuclear Materials and Propulsion Operation). The work, sponsored by the USAEC, was directed toward a wide support base for current and future reactor projects. In 1962, a Maritime Project was authorized to develop the 630A Nuclear Steam Generator, and the 710 Project was authorized to develop a high efficiency, fast spectrum refractory metal reactor as a propulsion and power generation system. In 1963, NMPO was assigned to Advanced Technical Services, in 1965 to the Atomic Products Division, and in 1966 to the Nuclear Technology Department under Nuclear Energy Division.

NMPO Managers were:

|      |             |
|------|-------------|
| 1961 | W.H. Long   |
| 1966 | S. Naymark  |
| 1967 | D.H. Ahmann |



# Nucleus of the ANP Department



Former NEPA Project people remaining with the program after five years were presented five-year pins by D.R. Shoults, general manager of ANPD, May 1, 1956.

Back row: J.M. Krase, P.E. Reagen, C.S. Lankton, R.J. Spera, A.E. Focke, R.N Stuart, J.A. Martin, F.H. Welch, H.S. Edwards, E.B. Delson, J.R. Lewis, I.L. Helms, J.F. Collins, E.S. Funston, C.G. Collins, Jr.

Middle row: W.B. Thomson, W.G. Baxter, John Draghic, G.M.B. Bouricious, R.W. Carr, D.F. Burton, M.C. Leverett, O.E. Tollefsbol, W.H. Jensen, J.C. McCulloch, F. Ahlroth, A.L. Grunewald, J.J. Neely, H.R. Stephan, Gus Neuss, Jr.

Front row: T.D. McLay, W.C. Schmill, F.W. Mezger, D.I. Weinberg, J.I. Trussell, T.R. Mitchell, D. Lewis, D.R. Shoults, W. Martin, E.R. Ur, V.P. Calkins, M.A. Pugacz, G. Thornton, L.A. Feathers, R.L. Potter.

Not pictured were W.J. Koshuba, J.A. McGurty, H.C. Brassfield, T.H. Hunter, and E.S. Collins.



In 1968, the AEC contract ended and NMPO combined with Nuclear Thermionic Power Operation (also from the Nuclear Energy Division), Space Power and Propulsion Section (from Re-Entry Dept.) and Isotope Power Systems Operation (from Space Systems) to form Nuclear Systems Programs (NSP) under Space Systems. The Idaho Test Station and Tennessee Operations were closed out. The organization of NSP in 1968 is shown on page 10.

In 1972 NSP was renamed Energy Systems Programs (ESP) and in 1974 it was renamed Advanced Energy Programs (AEP). Work continued in Building D on alternate energy sources such as solar collectors, windmills, Sterling Engine, etc. until 1984 when AEP was terminated with a plant closing.

The decontamination of Buildings C and D was continued by GE Aircraft Engines personnel in 1984 and completed in 1987. All Government-owned buildings were purchased by GE in 1989. Today Bldg. C is occupied by GE Aircraft Engine personnel. However, Bldg. D, the building we called home for so many years, was demolished in 1996 as part of the downsizing of facilities and personnel of the GE Aircraft Engine Group at Evendale. The grounds were planted to grass with a few small trees.

Managers were:

|      |                |
|------|----------------|
| 1968 | M.A. Zipkin    |
| 1970 | D. Huebner     |
| 1972 | J.E. Keister   |
| 1975 | W.H. Hurlebaus |
| 1980 | T.E. Russell   |

ANPD Organization  
November 1957

Atomic Products Division

F.K. McCune, V.P. & Gen. Mgr.

Aircraft Nuclear Propulsion Department (3140 employees)  
D.R. Shoults, Gen. Mgr.

Applications Engineering  
G.W. Newton, Mgr.

Development Laboratories  
M.C. Leverett, Mgr.

Design & Projects  
H. Miller, Mgr.

Idaho Test Station  
S.J. Levine, Mgr.

Facilities Engineering  
S.E. Cumpston, Mgr.

Development Manufacturing  
L.F. Yost, Mgr.

Finance  
G.R. MacArthur, Mgr.

Employee & Community Relations  
R.O. Schermerhorn, Mgr.

Operational Analysis  
J.W. Darley, Mgr.

Legal  
C.H. Crandall, Mgr.



NSP Organization  
1968

Space Systems

D.J. Fink, Mgr.

Nuclear Systems Programs

M.A. Zipkin, Gen. Mgr.

Materials Science & Technology

D.H. Ahmann, Mgr.

Manufacturing Test

R.H. Wettach, Mgr.

Program Management

R.D. Brooks, Mgr.

Isotope Power Systems Operation (VFSTC)

A.J. Arker, Mgr.

Nuclear Thermionic Power Operation (VNC)

J. VanHoomissen

Finance

R.C. Clark, Mgr.

Employee Relations

G.M. Hunsinger, Mgr.

Applications & Program Support

A.J. Wilson, Mgr.

Systems Evaluation (VFSTC)

T.F. Widmer, Mgr.

Development Engineering

E. Schnetzer, Mgr.

Reactor Engineering

W.E. Niemuth, Mgr.

Idaho Test Station

J.W. Morfitt, Mgr.